



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---------------|----------------------|---------------------|------------------|
| 09/964,893 | 09/28/2001 | Claus Erdmann Furst | 45900-00064 | 1329 |
| 30593 | 7590 | 07/11/2008 | | |
| HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195 | | | EXAMINER | |
| | | | MEI, XU | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2615 | |
| | | | | |
| MAIL DATE | DELIVERY MODE | | | |
| 07/11/2008 | PAPER | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/964,893

Filing Date: September 28, 2001

Appellant(s): FURST ET AL.

John A. Castellano
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 04/28/2008 appealing from the Office action mailed 11/27/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments

The appellant's statement of the status of amendments after non-final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|-----------|-------------|---------|
| 5,796,848 | MARTIN | 08-1998 |
| 6,421,448 | ARNDT et al | 07-2002 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5, 7, 17, 18, 36, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US Patent 5,796,848) in view of Arndt et al (US-6,421,448, hereafter, Arndt).

Regarding Claims 1 and 5, Martin discloses a microphone assembly of a hearing aid comprising a microphone assembly casing (6) having a sound inlet port (15), a transducer for receiving acoustic waves through the sound inlet port (1), and for converting received acoustic waves to analog signals (18), said transducer being positioned within the microphone assembly casing, an electronic circuit positioned within the microphone assembly casing, said electronic circuit comprising a signal path defined by a cascade of a pre amplifier (8) for amplifying analog audio signal from the transducer, and a sigma-delta modulator for providing digital signals (7). Martin does not disclose the microphone assembly further comprises filter means in the signal path between the pre-amplifier and the sigma-delta modulator to prevent low frequency components from reaching the sigma-delta modulator.

Arndt discloses having high pass filter subsequent to microphone contain a coupling capacitor and a resistor is a customary circuit for coupling a microphone signal into an amplifier circuit of a hearing device (see Col. 4, lines 35-40). And it is inherent for such customary high pass filter to prevent or attenuate low frequency components of the microphone input signal. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide or couple a customary high pass filter, as disclosed by Arndt, in signal path between the pre-amplifier and the sigma-delta modulator of Martin in order to attenuating or suppressing the low frequency band interference signal of the microphone input thus to prevent low frequency components from reaching the sigma-delta modulator to ensure more efficient signal processing by hearing aid signal processor of Martin.

Regarding Claims 7 and 38, it is well known in the art that circuits can be formed on integrated circuits to create a smaller circuit. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the circuit on an integrated circuit in order to create a more compact circuit for a small electronic device such as hearing aid as shown by both Martin and Arndt. And Martin further discloses the device is integrated on a monolithic integrated circuit (see Martin Claim 9).

Regarding Claim 17, Martin further discloses the microphone assembly 6 is connected to a signal processor, which inherently teaches a digital signal processor as the signal was converted to a digital signal prior in the A/D converter 7.

Regarding Claim 18, Martin further discloses the unit as a digital hearing aid (abstract). And Arndt's device is also a hearing aid.

Regarding Claim 36, the high pass filter means of Arndt had an upper critical frequency of 100 Hz (Col. 4, line 20-col. 5, line 28) that inherently is a filter for passing a frequency band (broadly read on as a band pass filter).

(10) Response to Argument

Appellant's arguments filed 04/28/2008 have been fully considered but they are not persuasive.

Appellant mainly argued on pages 8-12 (**section a** of the argument) of the Appeal Brief that "the Examiner has not provided any factual, or technical, reasoning that supports the Examiner's finding that the allegedly inherent characteristics of the high-pass filters 30 and 30' in Arndt necessarily flow from the teaching in Arndt". The Examiner respectfully disagreed. It has been recognized that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the secondary reference of Arndt clearly discloses "having high pass filter subsequent to microphone contain a coupling capacitor and a resistor is a **customary circuit** for coupling a microphone signal into an amplifier circuit of a hearing device" (Col. 4, lines 35-40 of Arndt, and as stated in the rejection above). And it is well recognized in the audio or electronic art that an ordinary or customary high pass filter (30 or 30' as shown

by Arndt) is generally used to suppress or filter out low frequency signal that is usually considered as noise or disturbance signal. It is clear to one of ordinary skill in that art that such ordinary or customary high pass filter would have provided inherent benefit of attenuating or suppressing or preventing the low frequency noise or interference signal being applied into the high pass filter. Therefore, it would have been considered obvious to the combined teachings of the references (i.e, Martin and Arndt) by providing or coupling a customary high pass filter in signal path between the pre-amplifier and the sigma-delta modulator of Martin in order to attenuating or suppressing the low frequency band interference signal of the microphone input thus to prevent low frequency components from reaching the sigma-delta modulator to ensure more efficient signal processing by hearing aid signal processor of Martin, as stated in the rejection above. In conclusion, the ordinary or customary high pass filter disclosed by Arndt with inherent benefit of suppressing or preventing low frequency noise or interference signal that is for the combined teachings of the references (Martin and Arndt) would have suggested to those of ordinary skill in the art.

Appellant argued on page 12 (**section b** of the argument) of the Appeal Brief that the Arndt reference shows "the high pass filter 30 and 30' are positioned outside of the microphone equivalent circuits 2 and 2', and that Arndt fails to teach, or suggest, a microphone assembly including a filter means as similarly recited in the independent claim 1". The Examiner respectfully disagreed. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking

references individually where the rejections are based on combinations of references.

See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the primary reference of Martin discloses a single microphone housing 6 that including pre-amplifier 8 and sigma-delta modulator 7 (see Fig. 2). It would have been obvious to one of ordinary skill in that art that the improved microphone assembly by the combinations of Martin and Arndt would have included the customary high pass filter within the single microphone housing as shown by Martin; contrary to the appellant's argument.

In response to appellant's argument on page 12-13 (**section c and d** of the argument) of the Appeal Brief that "the lack or motivation for combine Arndt's high pass filter with Martin's digital hearing aid, and the combination of Martin and Arndt fails to render claim 1 obvious", the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Furthermore, the motivation for the combinations of Martin and Arndt that rendering claim 1 is obvious to one of ordinary skill in the art is presented in the argument to **section a** above.

As these are the totality of arguments presented, and they have been found unpersuasive, the existing rejection of 11/27/2007 is deemed appropriate.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Xu Mei/

Primary Examiner, Art Unit 2615

Conferees:

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615

/Curtis Kuntz/

Supervisory Patent Examiner, Art Unit 2614